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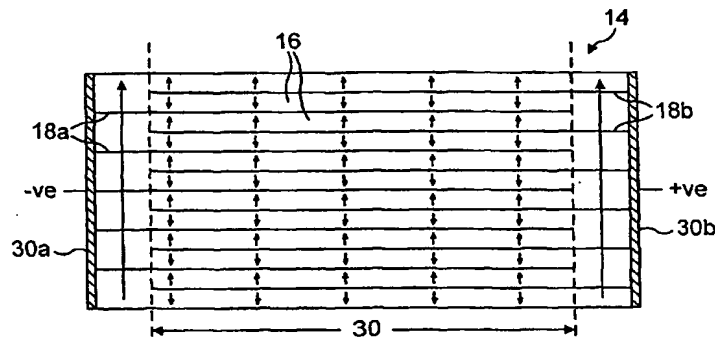
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(54) Title: **METHOD OF POLING FERROELECTRIC MATERIALS**



(57) Abstract: A method of poling a ferroelectric sample (14) of the type suitable for use in an actuator for an injection arrangement comprises the steps of providing a sample of ferroelectric material having first and second opposing end faces (23), first and second opposing side faces (21), and a stack of ferroelectric layers (16), wherein adjacent layers are separated from one another by internal electrodes (18a, 18b) arranged substantially parallel to the end faces (23) of the sample (14), and applying a primary external electrode arrangement (24a, 24b) to the first and second end faces (23) of the sample (14). A primary poling voltage is applied to the primary electrode arrangement (24a, 24b) so as to polarise substantially the entire ferroelectric sample along a single, first polarisation axis in a first polarisation direction. A secondary external electrode arrangement (30a, 30b) is applied to the side faces (21) of the sample (14), and a secondary poling voltage is applied to the secondary external electrode arrangement (30a, 30b) so as to polarise alternate ones of the ferroelectric layers (16) within those regions of the sample located between internal electrodes of opposite polarity. Alternate ones of the ferroelectric layers are polarised along substantially the first polarisation axis in the first polarisation direction and the others of the ferroelectric layers are polarised along a second, oppositely directed polarisation axis. The method provides a way of polarising substantially the entire sample whilst substantially avoiding discontinuities in ferroelectric strain throughout the sample (14), and particularly those regions adjacent to the side faces (21).

INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 H01L41/24

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B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6 356 008 B1 (NAKAJIMA MIKIO) 12 March 2002 (2002-03-12)	1-3,7,9, 10
Y	column 1, line 65 -column 7, line 63; figure 5	4,6
Y	US 4 649 313 A (ANDO AKIRA ET AL) 10 March 1987 (1987-03-10) column 6, line 38 -column 6, line 53	4,6

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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INTERNATIONAL SEARCH REPORT

Information on patent family members

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